# Anaphylactic Reaction to White-Faced Hornet Sting and Elevated Baseline (Asymptomatic) Serum Tryptase

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**Question:**

I recently evaluated an otherwise healthy 50-year-old man who experienced an anaphylactic reaction after a sting by a white-face hornet (witnessed). Skin testing was confirmatory. As part of the evaluation, a baseline serum tryptase was obtained 6 weeks after the initial reaction and was found to be elevated at 29 μg/L.

The patient has no signs or symptoms of mastocytosis or other mast cell—activating syndrome. Would you still recommend follow-up with a bone marrow biopsy in an otherwise healthy patient under the assumption that his disease could be indolent? Or can I follow-up with less invasive testing for now?

**Response:**

*This query was posed to Lawrence B. Schwartz, MD, PhD, Charles & Evelyn Thomas Professor of Medicine and Chair, Division of Rheumatology, Allergy & Immunology at Virginia Commonwealth University, who is an internationally known expert in the evaluation of serum tryptase levels as well as systemic mastocytosis. He responded as follows:*

With an elevated baseline tryptase level, a history of insect sting—triggered anaphylaxis, and venom-specific IgE, this patient is at increased risk of a severe life-threatening anaphylactic response to a future sting and also for having an underlying clonal mast cell disorder. Underlying hypertension, if present, would also increase his anaphylactic risk. Accordingly, clinically appropriate venom immunotherapy is indicated to reduce his anaphylactic risk to an insect sting. In addition, carrying an autoinjectable epinephrine device along with training on how to use it, learning the value of and how to implement the Trendelenburg position to ameliorate organ hypoperfusion during hypotensive anaphylaxis, wearing a medic alert information identification, and using prophylactic H1/2 antihistamines should all be strongly considered.

The elevated baseline tryptase level being >20 ng/mL meets 1 of the 4 minor criteria for diagnosing systemic mastocytosis. To further assess mast cell clonality, a bone marrow biopsy can be performed in which the major criterion (mast cell granulomas with >15 mast cells per high-powered field) and other 3 minor criteria [spindle-shaped mast cells, $CD25^+$ or $CD2^+$ mast cells, and an activating c-kit mutation (typically D816V)] should be assessed. If skin lesions such as urticaria pigmentosa are present, a skin biopsy can reveal collections of spindle-shaped, $CD25^+$/$CD2^+$ mast cells and expression of an activating c-kit mutation, but such lesions may not be present. Either 1 major and 1 minor criteria or 3 minor criteria are recommended by the World Health Organization for diagnosing systemic mastocytosis, but mast cell clonality alone can be diagnosed if either an activating c-kit mutation or $CD25^+/CD2^+$ mast cells are detected. Whether a precise diagnosis of a mast cell clonality disorder such as systemic mastocytosis is needed to determine treatment and prognosis in all cases is open for discussion. If there is no evidence for organ impairment, including the hematopoietic system (bone marrow by peripheral blood cell counts, adenopathy), hepatobiliary system, and gastrointestinal system, then an examination of bone health (osteoporosis, osteosclerosis) and regular evaluations (history, physical examination, complete blood count with differential, comprehensive metabolic panel, tryptase) every 6 to 12 months may be satisfactory. Indeed, many patients with indolent systemic mastocytosis have stable disease for decades. Only a few who appear to have indolent disease may have an underlying more aggressive component or may, at some point, transform into a more aggressive form of mastocytosis, at which time a more comprehensive assessment is indicated. Thus, to make a precise diagnosis and to rule out other non—mast cell clonal diseases, a bone marrow biopsy eventually is needed. At present, curative interventions or safe long-term cytoreductive therapies for patients with indolent systemic mastocytosis are not available. As such therapies do emerge, an early assessment of mast cell clonality will be more clearly indicated.